WHAT IS CLAIMED IS:

1. An electron source manufacturing apparatus characterized by comprising:

a support member for supporting a substrate having a conductor;

a vessel having a gas inlet port and a gas exhaust port and covering a partial region of a surface of the substrate;

means, connected to the gas inlet port, for introducing gas into said vessel;

means, connected to the gas exhaust port, for evacuating an interior of said vessel; and

means for applying a voltage to the conductor.

2. The electron source manufacturing apparatus according to claim 1, wherein the support member comprises means for fixing the substrate to the support member.

3. The electron source manufacturing apparatus according to claim 1, wherein the support member comprises means for vacuum-chucking the substrate and the support member.

4. The electron source manufacturing apparatus according to claim 1, wherein the support member comprises means for electrostatically chucking the substrate and the

support member.

5. The electron source manufacturing apparatus according to any one of claims 1 to 4, wherein the support member comprises a heat conduction member.

6. The electron source manufacturing apparatus according to any one of claims 1 to 5, wherein the support member comprises a temperature control mechanism for the substrate.

7. The electron source manufacturing apparatus according to any one of claims 1 to 5, wherein the support member comprises heat generation means.

8. The electron source manufacturing apparatus according to any one of claims 1 to 5, wherein the support member comprises cooling means.

9. The electron source manufacturing apparatus according to any one of claims 1 to 8, wherein said vessel comprises means for diffusing gas introduced into the vessel.

10. The electron source manufacturing apparatus according to any one of claims 1 to 9, further comprising

means for heating the introduced gas.

11. The electron source manufacturing apparatus according to any one of claims 1 to 10, further comprising means for dehumidifying the introduced gas.

12. An electron source manufacturing method characterized by comprising the steps of:

arranging on a support member a substrate having a conductor and a wiring line connected to the conductor;

covering the conductor on the substrate with a vessel except for part of the wiring line;

setting a desired atmosphere in the vessel; and

applying a voltage to the conductor via the part of the wiring line.

13. The electron source manufacturing method according to claim 12, wherein the step of setting the desired atmosphere in the vessel comprises the step of evacuating an interior of the vessel.

14. The electron source manufacturing method according to claim 12 or 13, wherein the step of setting the desired atmosphere in the vessel comprises the step of introducing gas into the vessel.

15. The electron source manufacturing method according to any one of claims 12 to 14, further comprising the step of fixing the substrate to the support member.

16. The electron source manufacturing method according to claim 15, wherein the step of fixing the substrate to the support member comprises the step of vacuum-chucking the substrate and the support member.

17. The electron source manufacturing method according to claim 15, wherein the step of fixing the substrate to the support member comprises the step of electrostatically chucking the substrate and the support member.

18. The electron source manufacturing method according to any one of claims 12 to 17, wherein the step of arranging the substrate on the support member comprises arranging a heat conduction member between the substrate and the support member.

19. The electron source manufacturing method according to any one of claims 12 to 18, wherein the step of applying the voltage to the conductor comprises the step of controlling a temperature of the substrate.

20. The electron source manufacturing method according

to any one of claims 12 to 18, wherein the step of applying the voltage to the conductor comprises the step of heating the substrate.

21. The electron source manufacturing method according to any one of claims 12 to 18, wherein the step of applying the voltage to the conductor comprises the step of cooling the substrate.

22. An electron source manufacturing method characterized by comprising the steps of:

arranging on a support member a substrate on which a plurality of devices, each having a pair of electrodes and a conductive film arranged between the pair of electrodes, and wiring lines which connect the plurality of devices are formed;

covering the plurality of devices on the substrate with a vessel except for part of the wiring lines;

setting a desired atmosphere in the vessel; and

applying a voltage to the plurality of devices via the part of the wiring lines.

23. An electron source manufacturing method characterized by comprising the steps of:

arranging on a support member a substrate on which a plurality of devices, each having a pair of electrodes

and a conductive film arranged between the pair of electrodes, and a plurality of X-direction wiring lines and a plurality of Y-direction wiring lines which connect the plurality of devices in a matrix are formed;

covering the plurality of devices on the substrate with a vessel except for part of the plurality of X-direction wiring lines and the plurality of Y-direction wiring lines;

setting a desired atmosphere in the vessel; and

applying a voltage to the plurality of devices via the part of the plurality of X-direction wiring lines and the plurality of Y-direction wiring lines.

24. The electron source manufacturing method according to claim 22 or 23, wherein the step of setting the desired atmosphere in the vessel comprises the step of evacuating an interior of the vessel.

25. The electron source manufacturing method according to any one of claims 22 to 24, wherein the step of setting the desired atmosphere in the vessel comprises the step of introducing gas into the vessel.

26. The electron source manufacturing method according to any one of claims 22 to 25, further comprising the step of fixing the substrate to the support member.

27. The electron source manufacturing method according to claim 26, wherein the step of fixing the substrate to the support member comprises the step of vacuum-chucking the substrate and the support member.

28. The electron source manufacturing method according to claim 26, wherein the step of fixing the substrate to the support member comprises the step of electrostatically chucking the substrate and the support member.

29. The electron source manufacturing method according to any one of claims 22 to 28, wherein the step of arranging the substrate on the support member comprises arranging a heat conduction member between the substrate and the support member.

30. The electron source manufacturing method according to any one of claims 22 to 29, wherein the step of applying the voltage to the devices comprises the step of controlling a temperature of the substrate.

31. The electron source manufacturing method according to any one of claims 22 to 29, wherein the step of applying the voltage to the devices comprises the step of heating the substrate.

32. The electron source manufacturing method according to any one of claims 22 to 29, wherein the step of applying the voltage to the devices comprises the step of cooling the substrate.

33. An electron source manufacturing method characterized by comprising the steps of:

arranging on a support member a substrate on which a plurality of devices, each having a pair of electrodes and a conductive film arranged between the pair of electrodes, and wiring lines which connect the plurality of devices are formed;

covering the plurality of devices on the substrate with a vessel except for part of the wiring lines; setting a first atmosphere in the vessel;

applying a voltage to the plurality of devices via the part of the wiring lines in the first atmosphere;

setting a second atmosphere in the vessel; and

applying a voltage to the plurality of devices via the part of the wiring lines in the second atmosphere.

34. An electron source manufacturing method characterized by comprising the steps of:

arranging on a support member a substrate on which a plurality of devices, each having a pair of electrodes

and a conductive film arranged between the pair of electrodes, and a plurality of X-direction wiring lines and a plurality of Y-direction wiring lines which connect the plurality of devices in a matrix are formed;

covering the plurality of devices on the substrate with a vessel except for part of the plurality of X-direction wiring lines and the plurality of Y-direction wiring lines;

setting a first atmosphere in the vessel;

applying a voltage to the plurality of devices via the part of the plurality of X-direction wiring lines and the plurality of Y-direction wiring lines in the first atmosphere; setting a second atmosphere in the vessel; and

applying a voltage to the plurality of devices via the part of the plurality of X-direction wiring lines and the plurality of Y-direction wiring lines in the second atmosphere.

35. The electron source manufacturing method according to claim 33 or 34, wherein the step of setting the first atmosphere in the vessel comprises the step of evacuating an interior of the vessel.

36. The electron source manufacturing method according to any one of claims 33 to 35, wherein the step of setting the second atmosphere in the vessel comprises the step of

introducing gas containing a carbon compound into the vessel.

37. The electron source manufacturing method according to any one of claims 33 to 36, further comprising the step of fixing the substrate to the support member.

38. The electron source manufacturing method according to claim 37, wherein the step of fixing the substrate to the support member comprises the step of vacuum-chucking the substrate and the support member.

39. The electron source manufacturing method according to claim 37, wherein the step of fixing the substrate to the support member comprises the step of electrostatically chucking the substrate and the support member.

40. The electron source manufacturing method according to any one of claims 33 to 39, wherein the step of arranging the substrate on the support member comprises arranging a heat conduction member between the substrate and the support member.

41. The electron source manufacturing method according to any one of claims 33 to 40, wherein the step of applying the voltage to the devices comprises the step of controlling

a temperature of the substrate.

42. The electron source manufacturing method according to any one of claims 33 to 40, wherein the step of applying the voltage to the devices comprises the step of heating the substrate.

43. The electron source manufacturing method according to any one of claims 33 to 40, wherein the step of applying the voltage to the devices comprises the step of cooling the substrate.